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ON  
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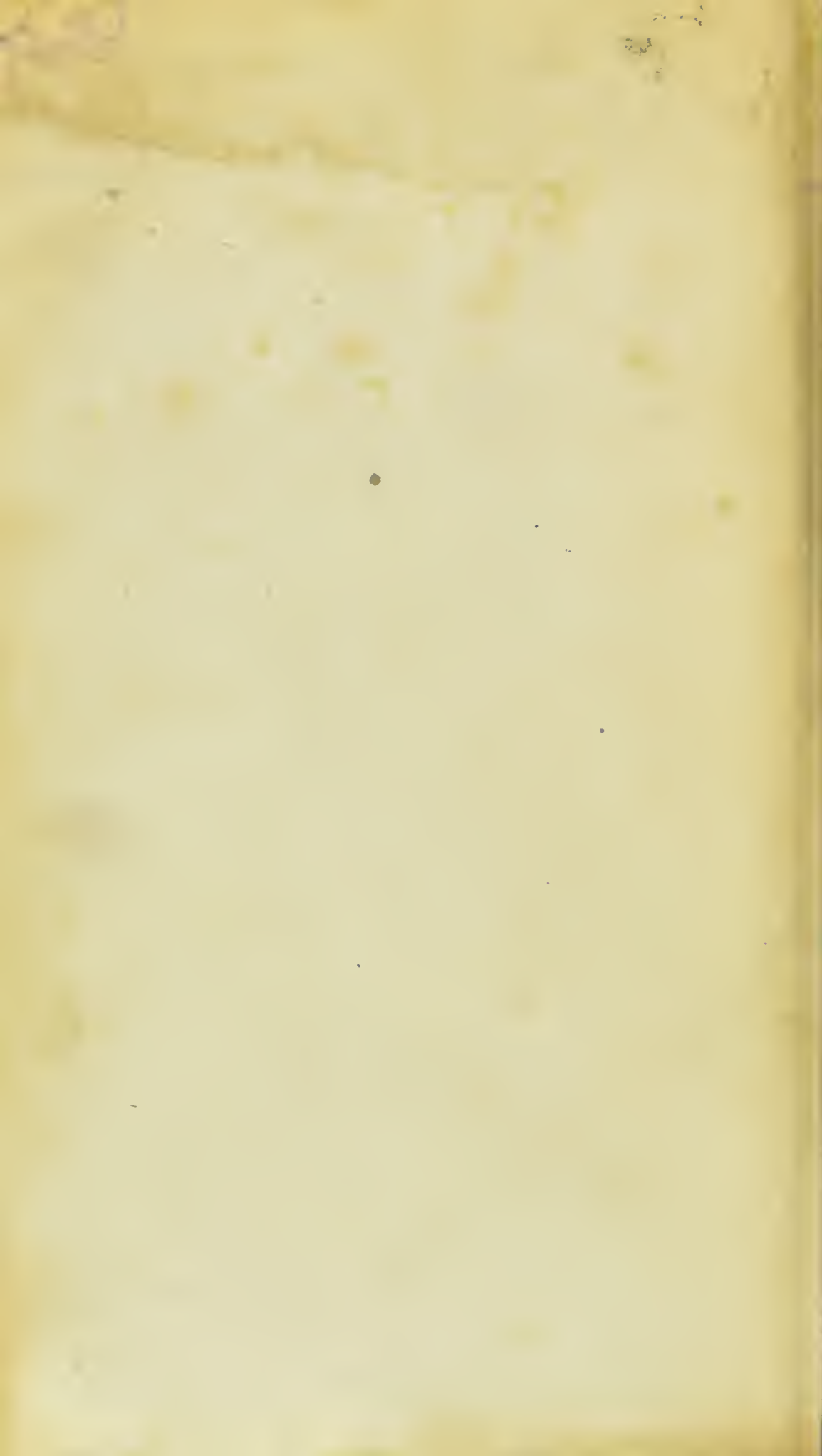
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OBSERVATIONS ON THE FEVERS

OF THE

West Coast of Africa.

BY HENRY A. FORD, M.D.

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## OBSERVATIONS ON FEVERS.

THESE fevers, generally known as "African Fever," "Guinea Fever," "Bulam Fever," or "Coast Fever," so much feared by Europeans, and so often proving fatal to foreigners, are doubtless malarious in their origin, and, in general features, are similar to those produced by marsh miasmata in other countries and climates.

The face of the country, in this region, is of a nature usually found to be productive of malarious disease ; but as a minute description of the topography of the country would lead me too far from my present design, I can only remark, that, like a large proportion of this entire coast, the land is generally low, often intersected by rivers and creeks, and covered by mangroves, bamboos, and other water-loving trees, and often overflowed by tides and freshets. This portion of the land seems to give character to the climate of the whole country, since although there is much dry land, and this is often elevated, yet it is so surrounded by swamps, that the atmosphere is probably uniform throughout the entire region. These remarks refer entirely to the coast. Interior, the face of the country is different, and, unless the dense forests generate disease (or rather the

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\* Observations on Fevers prevalent on the West Coast of Africa, made at Gaboon, Latitude  $0^{\circ} 30' N.$ , Longitude  $9^{\circ} 17' East$  from Greenwich ; during a residence of four years, from 1851 to 1855. By HENRY A. FORD, M.D. Originally published in the *New York Journal of Medicine*.

cause of disease), the climate may be healthy. These regions, however, have never yet been tried on any extended scale, all settlements having hitherto been made on the coast, or upon the rivers that are on a level with the sea.

Before entering upon the description of these fevers I will premise that, from the most careful observations I have been able to make, I am led to believe that too much distinction has been made between the different forms of malarious fever. In these localities, at least the intermittent in its various types, the remittent or "bilious," and the continued forms (which last occasionally occurs in persons of a peculiar temperament) are essentially one disease. The great division of diseases, and consequent multiplication of names, is not a matter of so great consequence as the diversity of treatment instituted by many practitioners, founded on a supposed difference in the pathology of these several forms of fever. To this I object, and, for this reason among others, I have treated of them as one disease. The relationship of these forms of fever is proved by the identity of locality. They all occur in the same localities, among residents as well as among transient persons. Again, they attack different persons at the same time and under similar circumstances, and the same persons at different times. All forms follow the same law of return. That is, all (indiscriminately) are likely to recur at hebdomadal or lunar periods. I have observed no difference, in this respect, between the various forms.

Again, on the recurrence of fever, at these periods, one form often succeeds another. Again, it often happens that an intermittent becomes a remittent or continued fever—and again, the last become intermittent. The last change happens in cases of gradual convalescence—the first in the increase of disease often arising from some organic cause. Lastly, the same general course of treatment is adopted in each form of fever. Though, in the opinion of many, the last proof may itself need to be substantiated, I can only

say, I have verified the propriety of the treatment in a large number of cases.

In view of these facts, I shall, in my "observations," first point out the appearances common in our cases of *fever*, afterwards (for the sake of greater clearness) note those symptoms that are peculiar to the different forms or phases that *fever* assumes.

*Preparatory Stage.*—To a person accustomed to observe his own sensations, there is generally a preparatory stage of fever, anterior to the (so called) stage of "invasion," which, though often overlooked or forgotten by the patient, is a part of the disease. This stage is of great moment, as it regards treatment; since in many cases, perhaps uniformly, the disease may be stopped here—the subsequent stages entirely prevented. It appears to be (or serves as) a warning, given by Nature, of approaching disease.

I believe that it is not peculiar to miasmatic fevers, perhaps not to fevers. The same symptoms are noticeable in the commencement of inflammatory diseases.

The variations from a healthy standard, in the sensations, as well as in the functions of various organs, are numerous. For a length of time (perhaps days) before the access of fever, the patient notices a loss of appetite, restlessness or sleeplessness, an unpleasant taste in the mouth, particularly on rising. These may be attended by constipations, and subsequently by uneasiness or weariness.

The most intense weariness I ever experienced has come on *spontaneously* in this stage of fever. There is a susceptibility to cold; and dryness and harshness of skin are present. The urine is copious and pale, which are often the first symptoms noticed by the patient. The pulse is usually unaltered, though sometimes frequent and small. There may be slight headache and irritability of stomach, though these are usually developed later in the disease.

The mental faculties are usually slightly disturbed. There is an incapacity for close thought, and the patient is soon



wearied by study. The imagination, however, is occasionally active, and the patient shows a restless desire to be engaged, without the ability to confine himself to any particular engagement. There is occasional moroseness and peevishness, or perhaps timidity, and an indefinable apprehension of coming danger. These symptoms appear separately, or are variously combined in greater or less intensity in different individuals, and at different attacks.

There are, however, many cases in which this formative stage does not occur, but that of invasion makes a sudden irruption. Some exciting cause comes in, giving rise to the fully developed attack, at once.

In susceptible persons, this happens after exposure to the direct rays of the sun ; severe and long continued exertion ; sitting in wet clothes after a rain, the wetting not proving as injurious if the person is able to obtain shelter and dry clothing. Great mental excitement produces a chill, as joy, sorrow, or fear. In these cases the attack is prompt and powerful, but not usually serious in its results.

In case of such exposure there would rationally be a resort to the same means of obviating an attack of fever as are used in the premonitory stage, just alluded to, which treatment will hereafter be described under the appropriate head. This is the only *safe* course. It may often be unnecessary, but again it often prevents fever.

After an indefinite period, varying from twelve hours to two days, another series of symptoms set in. These, though equally varied, are more apparent. This, usually called the "attack," is in fact the second stage, or that of

"*Invasion.*"—It begins with a disposition to yawn and stretch, succeeded by cold. The patient wishes to shield himself from the wind, or put on additional clothing, or lying down covers himself with blankets ; feeling the cold, however, in his feet and hands first, from thence it passes to the spine, and creeps over the whole body, always, however, producing the impression that the seat of the disease is in the extremities

and the spine, to which the patient begs to have the heat and stimulants applied. If cold is not speedily relieved, the chill becomes a rigor, although I have not often known uninterrupted chills prove as severe as in the common intermittents of the United States.

In some cases the chill is light, but it is attended by nervous symptoms of a most distressing kind. The patient seems paralyzed, dizziness comes on, he seems unable to stand or walk. Either from an exclusive attention to his own feelings, or real mental aberration, he is unconscious of objects and scenes about him, and only complains of prostration and want of breath. Occasionally the chill is attended with pain in the back and limbs, extending even to the feet, with headache. Some patients uniformly feel deeply-seated pain in the epigastrium, which produces faintings and intense prostration. Others complain of a belt of pain around the body on a level with the umbilicus, or higher up through the inferior parts of the chest; others feel pain simulating pleurisy, pervading the chest and impeding its movements. In case of chronic uterine disease there is often intense pain in that "organ" and the surrounding parts, extending to the hypogastrium and the iliac regions, as well as to the sacrum, simulating the true acute hysteritis, which, however, need not be feared, as the pain subsides before the close of the succeeding stage.

The general appearance of the patient is characteristic of the stage of the disease. The face is pale, the skin shrivelled, the nose contracted, or apparently more pointed than natural, the lips blue or purple, eyes dull and heavy. The pulse is unusually slow and feeble. This chill usually yields, under the application of heat and stimulants, after a short time. In many cases, however, even these applications are unnecessary, as the chill subsides spontaneously; but occasionally it returns on the accession of the third stage, making the patient exceedingly uneasy by distressing alterna-

tions of heat and cold,—flashes of heat and chills succeeding each other.

In a large number of cases, however, there is no chill at the “invasion,” but headache, nausea, pains in the back and limbs, and various sensations such as are described as attendant upon ague. These take its place, for a time, and eventually pass into the third stage—the stage of “*Reaction*.” This state of things is often extremely distressing, and the patient will often earnestly ask for relief. The distress usually subsides under the external applications directed to be used in the cold stage. I have noticed this mode of attack, in cases of new residents in first fevers, such persons usually supposing that they have “a cold,” or are weary, and do not admit that they are sick, until the fully developed hot stage forces them to apply for aid, though cases often happen in which they delay until the use of remedies becomes vain, and death follows as the penalty.

The necessity of a careful observation of one’s own feelings, especially during the early months of residence in a malarious district, is obvious, and should be enjoined by the physician. Yet so far from making these observations, newly arrived persons usually hide their unpleasant feelings, thinking them of no account, and in this way lose the favorable period for medication.

In regard to the time of the accession of the second stage, I have observed, in this climate, a marked variation from the hours at which it is represented by most authors to make its appearance. Though a large number of persons have been attacked during the day, usually in the forenoon, yet many are attacked at *night*; some on retiring to rest, some uniformly at or about midnight, and others some hours before day.

*Reaction*.—After an indefinite period, varying from one to six hours, the chill gradually subsides, the body becomes warm, and the extremities soon return to their natural temperature. The reaction, however, does not stop here; the patient from



feeling a pleasant glow, which is often very grateful after the rigors just passed, begins to complain of heat. He throws off the bedclothes and asks for air ; the skin becomes red and hot ; the face loses its shrunken appearance, becoming turgid ; the eyes appear bright and watery ; the pain in the head, if it previously existed, increasing ; thirst usually becoming urgent ; nausea coming on, with pain in the back and limbs, as in the previous stage. The nausea is often a most distressing symptom, not only harassing the patient by vomiting, but producing intense thirst, and forbidding the use of remedies by the mouth. In many persons it is a constant attendant on fever, from first to last, and becomes the most serious complication in the course of this disease. This occurs in cases not otherwise serious and entirely uncomplicated with organic disease.

The pulse always in the beginning increases in frequency and force—those cases not excepted, in which the pulse subsequently falls, which are hereafter to be described. The range, however, is very great, being from 80 to 130 beats in a minute, even in mild uncomplicated fever.

The urine is always changed. It becomes scanty in most cases. The color in ordinary mild cases is brown, in malignant cases, *red* or *black*. There are no more constant symptoms of violent disease than these changes in the urine. No patient can be considered out of danger, while the urine remains red or black. Inspection of this secretion should never be neglected by the attending physician.

When the fever is fully developed, in addition to the headache, a variety of strange sounds are occasionally heard, as whistling, murmuring, and crackling noises ; at other times there is deafness. These all simulate the effects of quinine, and are sometimes mistaken for them, which is the more unfortunate, as they indicate grave disease. The diagnosis, however, is not difficult, if the attendant physician have a clear idea of the sensations caused by quinine. It seems to the patient as if the ears were stuffed with cotton, or some

other soft substance. The deafness is not a simple abolition of hearing. The patient is inclined to pick his ears, as if some foreign substance were in them. Quinine is, furthermore, attended by perspiration in most cases.

The tongue, in the commencement of fever, is usually clean or covered only with a slight, white fur. If, however, the disease remain unchecked two or three days, the fur becomes thick and brown, or yellow. When the paroxysm remits, the tongue soon begins to throw off its load, commencing at the edges and tip. The appearance of the tongue in this, as in other fevers, is diagnostic of the stage of the disease. If it clears gradually from the borders, the central fur becoming rugged and broken, the disease may be considered as yielding. If, however, the fur flakes off in the centre of the tongue, leaving a red surface, some gastric or other disease of the alimentary canal may be suspected. In favorable cases, the tongue often loses its entire coating in a few hours. If the tongue remain loaded, and become dark-colored, with sordes on the teeth, the patient is becoming prostrate, and demands active stimulants.

This stage of fever is variable in its length. In most cases there is an intermission, or remission, within twelve hours, although the paroxysm may continue, under some circumstances, eighteen or twenty hours, still retaining the character of a true intermittent. Remittents are occasionally still more tedious. These remarks refer only to the first paroxysms. If cases are properly treated, the future paroxysms will not be protracted beyond twelve hours, in simple fever.

The fourth stage, that of "*Resolution*," is ushered in by perspiration, which first appears on the forehead, neck, and arms, and is gradually diffused over the whole body. Occasionally, this is sudden and profuse, but often slight and evanescent—a simple moisture. The pains in back and limbs abate, the headache subsides with the nausea, the urine becomes more copious and of lighter color, the pulse



lessens in frequency—often very decidedly—occasionally falling to its natural standard.

This is the end of the fever, so far as it can be said to end spontaneously. It is the signal for action on the part of the physician. If the opportunity is improved, succeeding paroxysms will be ameliorated—often they can be prevented.

The period of convalescence depends upon the severity of the attack. If the fever is checked after the first or second paroxysm, the confinement will be but short, and, after a day or two, the patient resumes his employments. If the case is complicated with visceral disease, it becomes tedious and dangerous according to the severity and obstinacy of the organic affection, and the stage at which it is noticed and treated. Affections of various organs, most frequently of the liver and spleen, may escape notice for a long time, becoming obstinate in proportion to their continuance.

Having given a general description of fever, as it occurs in these localities, I shall proceed to point out its various forms as they have fallen under my notice, and its complications as far as I have been able to detect them.

These forms differ in respect to the duration of the paroxysms, and the nature of the interval between them, and are named, accordingly, intermittent, remittent, and, in case of the absence of any appreciable remission, continued. They may also be classed with reference to the organic affections, with which fever is connected, as complicated and simple—and with reference to certain dangerous symptoms or peculiarities (independent of organic disease) malignant and benign.

These classifications appear to me to embrace the most important peculiarities of fever. Of course these specifications will not be understood to refer to as many different forms of fever, but, as the several classifications are based on different series of symptoms, one attack may be classed under three different heads at the same time.

This will be understood from an example :

If a person is attacked by fever, and after a longer or shorter period experiences an entire cessation of the symptoms constituting the paroxysm, he is said to have *intermittent* fever ; but if, in addition to the ordinary fever, he suffers from inflammation of the spleen or other organ, his fever is *complicated*, as well as intermittent ; and if, in addition to these there are symptoms of malignity hereafter to be described, the attack is *malignant* also. So that the same attack partakes of three characters.

The *intermittent* is the most common and usually the mildest form of fever. In many cases the first stage is slight and rarely noticed by the patient, though this is by no means a universal rule. The chill or the nervous symptoms that substitute it are strongly developed, and, in cases of malignity, the shock to the system is very great, as will be described under the head of “malignant fever.” The chill in intermittent cases continues longer than in other forms, and does not seem to bear any proportion to the force of the subsequent fever. This stage does not often continue more than two hours, often it is less than one hour, although, in some severe cases, there is a mixture of chill and fever (heat), continuing several hours, as before mentioned.

The termination of the chill and access of the hot stage is as described in the foregoing general remarks. Ordinarily the fever is high, the pulse is strong, full, and frequent, usually exceeding one hundred beats in a minute. The head-ache is often violent, nausea and thirst urgent, pain in back and limbs continuing from the cold stage, subsiding, however, before this stage is at an end. The length of this stage is usually short, not exceeding six hours, often less, although cases occur of much greater length. In uncomplicated fever this is rare.

As the fourth or sweating state approaches, all the violent symptoms subside, with a full flow of perspiration, and after a few hours, especially after sleep, the patient feels restored.

In many cases, however, the intermission is imperfect, resembling a remission, but, under treatment adapted to the prevention of the succeeding paroxysm, the patient soon entirely recovers.

This description may be the entire history of the disease. Under treatment this is often the case—but rarely without. The intermission, of which the sweating stage is the commencement, is ordinarily of short duration. The same series of chill, fever, and sweating is repeated, at the end of twenty-four or forty-eight hours from the beginning of the first paroxysm. Without the interference of the physician, however, there is danger of an arrest of the changes that complete the circle, and, in malignant or complicated cases, it often happens that there is no second period of resolution, but the hot stage continues for an indefinite time, or perhaps to a fatal termination.

Occasionally, during the second paroxysm, if no *efficient treatment has been instituted during the first intermission*, the ordinary interval is very imperfect, and the third and fourth chills return within a short time, making, as I have seen, three paroxysms in twenty-four hours. Such prove obstinate and often become continued. These cases have, as far as I have observed, followed *first* paroxysms of *simple, light* fever, in no way differing from those previously experienced by the same patients, which were uniformly stopped on the first day.

From these cases the necessity of prompt and efficient treatment strikingly appears.

The cases that I have noticed might in all probability have been stopped at the first intermission.

There is another noticeable variation of type, which in my experience has been obstinate in its course, and in one case resisted treatment until the fourteenth day, that is, until the seventh paroxysm. It was a *double tertian* in which the second paroxysm began twelve hours after the first, and the interval between the second and third thirty-six hours, that



is, the first coming on at sunset, the second follows at the succeeding sunrise, while the third attacks at sunset of the following day. The only cases of the kind that I have noticed have followed remitting fever at the end of a week, observing the hebdomadal period.

The *remittent* form of fever commences with a longer and more sensibly developed formative stage. The patient frequently complains of poor appetite, restlessness, giddiness, disinclination to labor with body or mind, with other manifestations of disordered vital actions, as described in the preceding general remarks. In those persons who recognize these appearances and use the appropriate remedies, the threatened attack is often prevented, but in the natural course of the disease the second stage follows the first after a short interval. The chill is often undeveloped, and a slight sense of cold, with distress in head, back, limbs, with nausea, takes its place. These soon pass into the hot stage. As the second stage is not so definitely marked as the ordinary intermittents (this is not uniformly the case), so we do not find the change to the third stage as prompt and definite. The pulse gradually rises in force and frequency, the heat of body increases, and headache and nausea become urgent; the furred tongue and highly colored urine follow. This stage continues longer in this than in the preceding form, but usually subsiding, or rather abating, within twenty-four (often eighteen) hours from the commencement of the chill.

At this stage of the disease there is often much time lost in waiting for a perfect intermission, or in attempting to procure it by various means, other than those designed to prevent another exacerbation. The remission, as the name implies, is often marked by only a slight decline of pulse and an amelioration of the distress and heat of fever. There is often but little perspiration and an unimportant change in the color of urine.

But even this apparently trifling amelioration in the se-

verity of the symptoms is a favorable circumstance. It is full of hope to the patient, and is an intimation to the attendant to act.

The hesitation betrayed by many in using the appropriate remedies for cutting short the fever, is, as I believe, wholly unreasonable and groundless.

The treatment should be the same as in the fully formed intermissions. Indeed, in ordinary cases, during the first paroxysm, I have only waited for a decline in the frequency of the pulse, or a slight moisture of skin, to begin with quinine, and I have never seen any untoward symptom follow such an administration of the remedy.

At or before the hour of "invasion" of the previous day, this remission, with a slight chill (perhaps without), passes into a hot stage, which in turn remits as before. If left without treatment, however, it encroaches on the succeeding remission, and again the paroxysm anticipates its time at the next exacerbation. This can be prevented only by vigorous treatment during the first and second remissions.

Though in ordinary cases the arterial excitement does not rise as high, as in the early paroxysms of intermittents, and for this reason are not looked upon by many as very formidable, yet careful observation will show that, in an uninterrupted remittent of four or five days' standing, the pulse becomes very frequent, the skin hot and dry, and cerebral pain very distressing. Under these circumstances, the fever becomes continued, or the patient suddenly dies from the violence of the disease, without apparent visceral complications or even the malignant symptoms (that often prove fatal) hereafter to be described.

Remittents follow neglected intermittents, or those that have become complicated with organic disease. During the second and third paroxysms, these organic difficulties very frequently arise, and greatly aggravate the fever.

The *continued* form of fever has been rare within the range of my observation, except as the termination of the

other forms ; but I have met with a *few well marked cases*. The first stage is similar to that of the intermittent form, the premonitions evident, the chill slight, sometimes entirely wanting. The period of excitement continues an indefinite period without appreciable remission. It has not occurred to me to meet with any cases of more than five days' duration. At this time, the fever has begun to subside, without a marked crisis. The hot stage has been similar to that of the remittent. There has, however, always been in my cases a remarkable irritability of stomach, in some cases simulating gastritis ; but these difficulties have yielded with the fever. I have seen but one fatal case. In this, the patient died on the fifth day, from the violence of the disease, without apparent organic lesion of importance. In this case, there was no treatment instituted until near death. This peculiar form seems, in some cases, to depend upon excitability of constitution. Persons susceptible to the common climatorial influences, suffering often from the debilitating influences of the climate, and great nervous irritability, seem to suffer in this way—though generally this fever is not more violent than other forms.

*Complicated Fever.*—I have already spoken of some complications to which fever is liable, which greatly aggravate it, always protracting it, and, if undetected, often rendering it fatal. I have given these cases a separate place and consideration, not because they belong to a distinct form of fever, being embraced in the foregoing divisions, but that they may be the more noticed, as I am satisfied that there has been much suffering and loss of life dependent upon organic disease, which, from its insidious nature, has not been suspected.

These complications are inflammatory and congestive. The most frequent are affections of liver and spleen, more rarely of the stomach and bowels. In whites, the lungs are very rarely affected. The brain is often the seat of congestion and inflammation, although I do not consider these



difficult of detection. Congestion and sub-acute inflammation of the liver are often undetected by pressure; the patient feels no pain, but it may easily be known by the dullness on percussion. There is often no tenderness in the part; either because there is no soreness connected with the disease, or because the tender part is out of reach of pressure. Percussion not only detects dullness, but often sensibility. The same remarks may be made in regard to the spleen, which is even more frequently subject to *chronic enlargement*, and is constantly liable under these circumstances to excite fever. No person is perfectly safe, with these enlargements, on this coast.

In cases of fever, in which the excitement returns after the second intermission (or remission), the appropriate treatment having been instituted, I consider there is reason for suspecting organic disease. It may be simple congestion, or, more probably, inflammation. In case of *chronic enlargements* of spleen or liver, any exciting cause of fever—as exposure in the sun, loss of sleep, excess in eating or drinking, or the return of the day in the week on which the patient has previously been attacked—will rekindle the fever. In these cases there is always a necessity for the patient to return to a cold climate, at least for a time. The patient may recover from many attacks, and be perfectly comfortable and apparently well for a time, yet the difficulty is sure to return, if the local disease remain. The attacks of fever eventually become malignant, and the patient dies.

That class of cases in which the *inflammation follows*, the onset of fever proceeds very insidiously, as was before mentioned, often perplexing the physician and baffling his skill, if the real cause of disease escapes notice, which it is likely to do, unless particular search is made for it. Under this influence, the periodic attacks degenerate into continued fever. Therefore, on the first appearance of obstinacy, a thorough *manual* examination should be made.

I have seen abscess of liver undetected until it was ready to point, and was almost in a condition to be opened externally.

The examination for disease in the abdominal viscera should be made with the patient standing, if possible. Strong pressure should be made under and behind the ribs on both sides. Percussion also should be always made, since pain as well as dullness is often detected by this means, while nothing could be learned by pressure.

These examinations can be made by any one—even by a person unaccustomed to making them. Often it is only necessary to call the patient's attention to the condition of the regions of the liver and spleen, and he will himself at once detect any existing difficulty.

Splenitis is much more easily detected than hepatitis, as the organ becomes larger, harder, and more irregular in shape, frequently presenting sharp angles, and yet, strangely, this has escaped notice for a long time. It has even, in some cases which have come under my care, so far enlarged as to interfere with the movements of the heart, and then for the first gained the attention of the patients, who have supposed that they have suffered from cardiac disease.

I may here remark, that this chronic enlargement of spleen is not peculiar to whites on this coast, though more troublesome and dangerous to them than to natives. The native children often suffer from it. The abdomen is greatly enlarged by the viscus, and its outlines are occasionally visible through its walls. The same is true of grown persons, in some localities and under some circumstances. I have noticed that pregnant women (natives) have enlarged spleens, particularly in the puerperal state, immediately after delivery. Some have been brought to me in this condition, which, to the natives, seemed hopeless. Such, however, are extreme cases. Ordinarily, the disease readily yields to treatment ; often, no doubt, subsides spontaneously.

Cerebral inflammation and congestion are not unfrequent



complications of fever. The pain of inflammation may be neglected on the supposition that it is only the effect of fever. It is not easy to draw a line of distinction between the pain of incipient inflammation and that of fever ; but the pulse affords the best datum. If the pulse remains full, strong, and frequent after the time for the remission, or if it rise with the pain, there is good reason for suspecting inflammation. In all cases in which the headache has resisted the ordinary palliatives, and has continued into the second intermission, I have not hesitated to use active remedies, particularly in those cases in which unnatural sounds have been heard by the patient.

*Malignant Fever.*—The term malignant is here applied to certain forms of remittent and intermittent fevers, that are characterized by several dangerous symptoms, which, on account of their severity, demand a separate consideration. This form of fever is by no means regular in its mode of attack. It may begin as a benign intermittent, showing its peculiar character only in the second paroxysm, or may show its nature at the onset. Occasionally, the patient is pale and feeble for days before the attack, having various other premonitory symptoms of fever, as described above. In several instances it has, under my observation, followed attacks of benign intermittent, after the interval of a *week*, but without premonitory symptoms.

In the most common form at the commencement, the patient's skin assumes a yellow color ; the face a haggard appearance. It seems shrivelled and pointed even before the chill comes on. In some cases, though, there is a true chill, yet the patient may not complain of cold. The skin is not only corrugated like "goose flesh," but the extremities have a soaked appearance, as if they had been long immersed in water.

Occasionally the body is covered with profuse perspiration ; or a part may be in this condition, while other parts are dry and hot. The pulse is usually frequent, but some-

times irregular. Where it remains very frequent for a long time, the case usually proves fatal.

The thirst is often extremely urgent, but the stomach rejects whatever is swallowed. Late in the disease the vomiting becomes only a regurgitation of ingesta, mixed with green and yellow fluids. Immediately after the chill (perhaps before it has passed off), the urine, which is usually free, becomes red or black. The bowels are often free, and move with yellow or red dejections.

The approach of this form of fever is often very gradual, and with symptoms quite unalarming to the uninitiated. He suffers perhaps from headache, loss of appetite, or slight nausea, a general feeling of uneasiness, and restlessness ; the skin becomes yellowish, and the urine red. He may have a slight chill for two or three days, and yet not be obliged to take to his bed, or feel inclined to use active remedies.

In some cases I have known patients to be at labor, or come unaided to the hospital, within twenty-four hours of death.

From these cases, the necessity of prompt and efficient treatment, and the early application of the patient for advice are apparent.

We occasionally meet with another form of malignant fever, in which the patient is pale only without yellowness. His countenance exhibits a ghastly appearance. There is an expression of fear, without any corresponding emotion, or of wildness, while the patient is sane. The surface is cold to the touch, but the patient does not complain. Indeed he may suffer from *sensations* of heat and thirst. The surface is almost insensible to stimulants. The pulse may be small and very frequent, particularly at the beginning ; but in some of these cases it becomes very slow and irregular. Sometimes, under these circumstances, the patient sinks, and reaction never comes on. From such terminations we may gain light as to the mode of

treatment demanded, *i. e.*, *stimulation*—support to the *system*. These symptoms, variously combined, constitute the first paroxysm. There may be, however, a previous mild paroxysm, which is not here considered. After a few hours there is an intermission, in which there may be a decided amelioration of all the symptoms, but the yellowness of skin and red urine do not disappear entirely. Or there may be only a slight remission, with a faint attempt at a return to a normal condition of the system.

But whether the remission be perfect or not, the demands for active treatment are the same. This is, probably, the only favorable opportunity for interference by the physician.

At the end of twenty-four hours (as I have only seen this form in quotidian type), the disease returns with augmented force. The patient is tortured with thirst, but vomits all ingesta ; bowels become irritable, so as to reject all injections per rectum, the urine assumes a darker hue, often foams as it is passed into the chamber, the alvine evacuations become bloody, and the ejections from the stomach become green, and finally black ; and the mental obtuseness increases with the other fatal appearances.

Towards the close of the second day there may be an attempt at an intermission, which, however, in cases without treatment, has always, as far as I know, failed. During the third day the patient becomes insensible, the pulse irregular, the breathing slow, often less than sixteen respirations in a minute, which afterwards degenerates into a deep sigh, which is repeated at an interval of several seconds. In another class of cases, the patient retains his senses much longer, and the respiration remains nearly natural for a much longer time, but the surface in these cases seems to be much sooner paralyzed, becoming cold and cadaverous to the touch, the stomach *seeming* to be in the same condition. The pulse becomes feeble and rapid, until it ceases entirely at the wrists, which happens several hours before death. This often takes place within sixty hours. I have not seen



a third intermission in a fatal case, for although the patient may live until the fourth or fifth day, all distinction of stages is lost.

The peculiar symptoms of this fever, by which it may frequently be detected very early in its course, are yellow skin, red or black urine, together with vomiting of yellow fluids, and intense restlessness or stupor, frequent chills following each other at six or eight hours interval, or one violent chill followed by stupor or violent pain in the head. Or perhaps there is only extreme paleness, with the unnatural expression of countenance above described, a cadaverous feeling of the skin, insensibility to external irritation, continued and burning thirst, vomiting of all ingesta, and purging, with dark yellow or bloody stools.

These observations refer to the disease unchecked by treatment. If, however, the appropriate treatment is early and vigorously used, the second paroxysm may be ameliorated or prevented, and the disease terminated on the third day.

In all cases of malignant fever, any inflammatory complication will aggravate the disease. Most of the fatal cases that I have seen have been of this description. Some of the cases have suffered under old splenitis or hepatitis, or it had been found too late, that *recent* inflammation had sprung up during the course of the disease.

*Causes of Fever.*—Without dispute, the great exciting cause of this fever is found in the constitution of the atmosphere. It is a *malarious* fever. The peculiar depraved condition of the air, on which this propensity to fever in Europeans depends, I am unable to determine, at least I am not satisfied with any explanation I have seen or can assign. The heat of climate is not excessive. The thermometer, in all localities along this part of the coast from which I have been able to obtain observations, has ranged from 65° to 90° (F.); a degree of heat less than in many salubrious localities in other parts of the world. Of the comparative *moisture* of our climate, I cannot make any just estimate, as I have had

no opportunity to compare my hygrometric observations with others. This, however, I may hope to do at a future time. My belief is, that we have, at a short distance inland, as dry an atmosphere as the heat of the climate will allow.

We find but little mould and decay in places well protected from the sea breeze. The prodigious production of fungi in various localities on this coast, as *described in books*, I have never seen or heard of *here*.

The predisposing causes of fever are numerous. Among the most important are sedentary habits ; in which many are led to indulge by the debilitating influences of the climate. All students and writers, who do not take much active exercise in the open air, are subject to fever. Many ladies, on various parts of the coast, living in inactivity, suffer from fever. Temperament is a predisposing cause. Persons of a nervous temperament, and those of light hair and fair complexion, or those of dark complexion but of strumous habit, are peculiarly susceptible to the influences of this climate. Licentious indulgence, for which degraded Europeans find ample scope on this coast, predisposes to fever in a large number of cases. Intemperance *indirectly* subjects a person to the malarious influence. Though the first effect of spirits is to protect from atmospheric influences, yet after this effect has passed off, the person is more liable to contract fever than a temperate man, and this is likely to be more violent. Sailors who remain on shore over night, in a state of intoxication, are usually attacked with fever, although sober men may frequently do so with impunity. From the best information I can obtain, I am led to suppose that the white soldiers formerly used (or rather lost) on this coast, fell a sacrifice to habits of intemperance.

In females, that condition of system attendant upon the menstrual flux is a strong predisposing cause. Many females are attacked with fever at their monthly periods. In case of uterine disease the predisposition is still stronger. One

attack of fever predisposes to another. The sooner a person is attacked after his arrival on the coast, the more frequently and severely is he likely to be attacked. As fever follows the hebdomadal period in its return, the recurrence of every seventh day after any attack will predispose to fever. The intervals at which different persons are attacked are various. Some suffer weekly, some bi-weekly, some tri-weekly, or monthly. The most common interval within my range of observations has been fourteen days. The bracing air on the coast often produces fever in those accustomed to the atmosphere of the interior. A change of place is a cause of fever in many ; even in persons who go from an insalubrious to a more favorable climate. This is often the case with persons going to sea ; they often suffer from one or two severe attacks of fever.

Besides a propensity to fever, on a temporary change of residence, I have noticed that particular persons enjoy much better health, in localities considered very insalubrious, than in those that are inhabited with safety by large communities, and, on return to those localities, they have regained the health that they have lost in these *apparently* salubrious localities. A long residence in a malarious region powerfully predisposes to fever. This effect is produced indirectly by causing visceral disease ; in other cases, by producing the debility common in hot climates ; but, besides these effects, a long residence begets a proneness to fever in sound and strong men. Hence the necessity of occasional retreats to cool and salubrious countries.

In regard to the length of time, after visiting a malarious district, at which a person will be attacked by fever—there is the greatest diversity of experience among susceptible persons—while some are entirely insusceptible to malarious influence. While some are attacked within eight days, others enjoy immunity for a year, and then, without assignable cause, are attacked.



As I have said before, "a strong predisposing cause of fever, is an attack of fever." Consequently one attack is an *initiation*, instead of a protection. Hence the folly of the old idea that "it is better not to interfere with the development of a fever." It is a truism—that the best plan for keeping clear of a disease is not to be attacked by it—*i. e.*, prevent its development. Of *self-limiting* diseases this is not considered judicious ; but malarious fevers are not claimed to be such. That this idea of prevention is the true idea of treatment, is proved by facts occurring under my own observation. In several cases, persons who had habitually suffered from weekly and bi-weekly attacks, have, after preventing their return for a few periods, been free from them, and have enjoyed perfect health for an indefinite length of time.

*Treatment.*—The treatment that I have resorted to most successfully in mild fever is very simple. It is entirely prophylactic. It is designed to prevent the attack, or rather to prevent its full development if detected early, or the repetition if the paroxysm is fully formed. During the forming stage, I have given quinine in sufficient quantities to bring the system entirely under its influence before the chill comes on. This is possible in many cases, though frequently patients do not detect the premonitions of disease ; in this case, we must wait until the intermission. In numerous cases, however, in which patients have been willing to attend to their own feelings, and employ remedies faithfully when they have felt the approach of fever, I have had the gratification of seeing them enjoy perfect immunity from this species of disease, though previously suffering from frequent attacks.

The same success has attended the use of remedies in cases in which fever returns at fixed intervals. The patient takes quinine just before the time of the expected attack. It is safer to commence the use of the remedy the day before, so as to anticipate the disease. This use should be continued every seventh day for a long time ; the quinine should be

taken in sufficient quantities to be slightly felt by the patient. The peculiar sensations produced by this remedy are singing about the ears, or whistling, or dashing sounds accompanied with deafness. This, however, is characteristic ; it *seems* to be produced by filling the ears with some soft substance. It is not a simple loss of hearing. Ten grains in a day is ordinarily sufficient. The quantity required in health is less than in the best marked intermissions. In ordinary intermittents, it is not designed to cure the paroxysm, but to mitigate its violence, if severe, and prevent its return. To effect this with certainty, the quinine should be given soon after the hot stage has begun to subside. Though this is not customary in many countries, the treatment being delayed until near the end of the intermission, I consider it necessary here for several reasons ; 1st. The intermission may be short, the paroxysm anticipating its hour on the succeeding day. 2nd. An irregular chill may set in. 3rd. Though a person may have been subject to tertians only, he can not be sure that the same type will be preserved. The fever is liable to become quotidian on any new attack.

For these reasons, I have not ventured to delay the treatment long after the commencement of the intermission. Besides, it occasionally happens that there is much difficulty in bringing the system under the influence of the remedy, and, consequently, time is needed. It is far better to begin too soon than too late, as the only difficulty arising from this course is, the unpleasant sensations produced during the time. It is the aim of the physician to preoccupy the system with quinine. In this way the fever will either be unable to rise, or be greatly mitigated in force. I have been led to consider quinine and fever (in chemical phrase), "incompatibles." If the system is preoccupied with this agent, the fever cannot get in. I believe the case is the same with calomel ; but of course its effects are more tardy in development, and more tedious in recovery, and withal more depressing and distressing in their consequences. These



remarks will apply to remittents as well as intermittents. In the former greater care is required to observe the first decline of the fever, and make use of vigorous treatment. If there is no complication, the same remedy is sufficient.

In administering quinine, I have been accustomed to give six grains every hour until its peculiar effects were produced. This usually takes place at the end of three hours—often sooner. After this, very small doses (two or three grains), once in two hours, will keep up the effect until the time of the expected paroxysm has passed.. The medicine should be so administered as to bring the system under its influence three hours before the expected attack. If it is not convenient to administer the medicine in small doses frequently, ten grains may be given at the beginning of the intermission, and repeated at the end of four or five hours afterwards, always repeating smaller doses to maintain the effect of the remedy. In most cases, twenty-five grains given in time will produce all the effect desired, will prevent the return of the chill, but in some conditions of the system twice that quantity is necessary. As has before been said, the effect upon the system is the only guide in the administration. If a large quantity is demanded to produce “quininism,” there is, as I believe, the greater necessity for the full action of the medicine. As to any theoretical objections to the use of fifty or sixty grains in one day, or remission, my experience in my own person, as well as in numerous patients, proves them to be absolutely imaginary. I have never seen a case prove fatal, or even troublesome, for any length of time, that was treated with decided doses of quinine. All the deaths that have occurred within my observation, have been in cases in which small doses of quinine have been administered, or in persons who have been unable to retain this remedy in any doses.

Hitherto I have considered the use of quinine as a prophylactic, given in the intervals, or before the actual onset of disease. I have used the same remedy successfully to

subvert fever. In several cases, violent *continued* fever has yielded under the constant use of quinine. The amount required to affect the system is greater during fever than in its absence, but a persevering use of the remedy will produce its characteristic effects, and the disease will eventually yield. The resolution of the fever is not, however, so sudden or entire as the spontaneous resolutions of the paroxysmal forms. As it regards the time at which the quinine may properly be administered in cases that show no disposition to remit, I think it is not advisable to delay more than eighteen hours from the time of invasion. If the fever persists beyond this without an attempt at remission, I give the quinine to produce one. I use quinine in this manner from a conviction that it is not a stimulant.

It often depresses the pulse and produces free perspiration. It has never occurred to me to see any increase of pulse, either in force or frequency, from large doses—on the contrary, I have seen decided diminutions of frequency in various cases in which the largest doses were administered. In a healthy person, largely under its influence, the pulse is slow, full, and soft, the skin cool, soft, and moist.

In the administration of quinine, there is often much difficulty in so covering the taste as to secure its retention in the stomach. Many persons conceive a great repugnance to it after frequently taking it. It often causes nausea, and is sure to increase it if pre-existing. Though a person may take it in health without difficulty, on the attack of fever the stomach rebels. The difficulty depends either upon the bitterness, or, subsequently, upon the action of the medicine upon the stomach. A variety of expedients have been used to introduce the quinine into the system. It has been exhibited by the mouth, concealed in various menstrua ; it has been given in injections, per rectum, and by frictions to the skin. It has been combined in form of pill with various substances, as morphine, or crude opium, oil of pepper, or camphor. These are designed to prevent subsequent nausea,

and the pillular form obviates the bitter taste. I have usually found this the most available form, the only objection being its tardiness in operation. If, therefore, the time is limited, it is not safe to trust the pills. If they are made with some very soluble menstruum, they may be used in ordinary cases.

I have found a little treacle, or paste made of flour and cold water, very soluble. They, however, degenerate by age. Quinine pills made with an aqueous solution of gum Arabic, soon become as insoluble as marble; the "syrup of gum" is but little better than the solution. I have seen pills of this kind discharged, per anum, on the fourth day, unchanged. Quinine given suspended in coffee or tea, loses most of its nauseous taste, and does not nauseate afterwards. Some can take it in wine, and others in the bitter tinctures, the gentian and cinchona substituting their own bitterness for that of the quinine. The aqueous solution (or suspension), if tolerable, is the most prompt and valuable mode of administration; some acid united with it is thought to hasten its action; it doubtless increases the bitterness. The administration by enema, with starch and laudanum, is a very convenient mode, and is a very good resort in case the patient cannot swallow the medicine. There must be an addition of one-third or fourth, as it does not operate as powerfully as if given by the stomach. Some use acid, but it irritates the bowels, thereby causing its own discharge.

Of all other anti-periodic remedies recommended by authors, I have found none worthy of confidence, except the arsenite of potash, which has done good service as an adjuvant of quinine. I have prescribed the tincture, wine and infusion of cinchona, as tonics and prophylactics, to be taken constantly for months, and have seen them produce very good effects.

The treatment to be used during the chill consists of stimulants, internal and external, and applications of heat. The patient usually covers himself in bed, and finds some



comfort in the application of heated irons or stones, or bottles of hot water.

The stimulating frictions used are mustard or pepper. The first is frequently applied in poultices, to large surfaces on the back, arms, and legs, and often proves very beneficial in equalizing the circulation and restoring the temperature. The fresh peppers, if actively applied, produce much burning, which usually cuts short the chill, and seems to lessen the succeeding fever also. It seems to check the whole train of morbid phenomena; the pain in back and limbs quietly subsides with the general distress accompanying it. The great objection to the use of the peppers is, the difficulty of controlling or regulating its effects. The patient often suffers severely, and it is difficult to assuage the pain. In some cases it has been necessary to use the cold bath, but such is the effect of the stimulation of the pepper, that the chill does not return, even in the cold water. The vinegar, or tincture of the peppers, may be used more safely—they do not produce such violent effects.

The only treatment, during the hot stage of simple fever, is diluents, as lemonade, and other acid and cold drinks. If the urine is scanty, and very high colored, the spirits of nitre may be given in water or weak tea. In case of costiveness, this is the appropriate stage for the exhibition of cathartics, which should be given so as to act from four to six hours after the commencement of the fever. Given in this way they not only fulfil their primary indication, but they assist in bringing about the stage of resolution, if they operate at the time at which the hot stage would naturally pass off. The best cathartics appear to be the resinous, in combination with calomel. The "compound cathartic pill" is very useful and easy of operation. I, however, have used a similar combination with hyoscyamus, which is often needed to prevent the irritating effects of the other remedies.

The constant and indiscriminate use of cathartics in fever cannot be other than injurious. I have seen much irritation

of the bowels and nervous depression arise from their use in the early stages of fever, and general prostration in the later stages. I do not believe it is best to give cathartics, simply because a patient has fever, but only for the relief of some unfavorable symptom, or to correct some deranged function, or act upon a diseased organ. In complicated cases, they are necessary, and must be used ; but if the fever is simple and benign, and the bowels open, the patient will be quite as safe and much more comfortable without. In case of continued or obstinate remittent fevers, I formerly gave calomel in small "alterative" doses, and with some success ; but I was often disappointed in the result, though ptyalism was produced, and I found the operation of the medicine more prostrating, and convalescence more tedious, than in the exclusive quinine treatment. In great heat of body and dry skin, I have used the cold bath ; or, if the patient could not bear this, the wet sheet, or sponging with cold water. The headache is frequently relieved by the application of cold water. If the fever subsides while the pain remains, mustard to the neck and back often entirely relieves it. Morphine, under the same circumstances, also in case much nervous excitability attends the pain, will be found very useful. The infallible remedy, however, is leeches. In all cases (when other means have failed), I have found them entirely successful. Cupping the temples, though less convenient, is a substitute for leeching. Nausea, if urgent and continued, may be relieved by effervescing draughts, or mustard to the epigastrium, or, if these fail, by some preparation of opium ; the "black drop," or opium pill, are perhaps most efficient. Hydrocyanic acid is sometimes very efficient. It has been administered, in connection with quinine, with happy effects. The prussic acid must be administered by a *careful hand*.

In complicated fever, an energetic course of treatment must be adopted.

If the inflammation is active and recent, either of liver,

spleen, bowels, or stomach, leeches should be freely applied, or, in the absence of these, cups. In connection with these means, calomel, in small doses, is very useful. Its use should be carried to slight ptyalism, unless the urgency of the symptoms abates. In splenitis of a violent grade, I have seen all pain and heat abate under the use of leeches alone. I have never found it necessary to use mercurials largely in this disease. Blisters have followed the primary treatment, (that of abstraction of blood,) and completed the cure. Cathartics are of more value in splenitis than in the other inflammations just mentioned. In one severe case of gastritis, for which I was unable to obtain leeches, I trusted entirely to mercurials. On the commencement of ptyalism, which took place very promptly, the pain and nausea of the disease suddenly subsided. So remarkable was the coincidence, that the patient, unasked, pointed it out to me.

In hepatitis, blisters may be used early, as the inflammation soon becomes sub-acute; they may be applied the second or third day after the leeches, the bites being covered with bits of adhesive plaster, or, if the "fluid" is used, it may be applied around them. They are very useful in subduing induration, and in chronic cases vesication is the great local remedy, to be used in connection with mercurials. All such cases, however, should be actively treated *after the fever is subdued*, its return being guarded against by the timely use of quinine. In the treatment of the complicating local disease, the fever is not to be forgotten, but in the remissions is to be treated with quinine.

These cases are tedious, being protracted by the local difficulty. In cerebral complication, I have always used leeches with success. I have never, in whites, been obliged to resort to general depletion. The leeches have been followed with cathartics. Under this treatment all my cases have yielded. Quinine with morphine, in the remissions (which are often but slight), gradually subdue the fever.

In malignant fever, the treatment must be prompt and



energetic, as the case is almost certain to prove fatal if it goes on to the third paroxysm.

If there were, in all cases, a certainty of gaining a perfect intermission, after the first paroxysm, quinine might be depended upon as a safe remedy, as I believe the disease is controllable, when there is an opportunity of bringing the system entirely under the influence of this remedy ; but, as the intermission is often imperfect, I have thought it safer to give calomel during the first paroxysm. I have given ten grains at a single dose as a cathartic. At the first operation, the urine has notably changed in color, and other symptoms have been mitigated in severity.

During the *invasion* there is need of active stimulation as directed in the treatment of the second stage of mild fever ; but this must be active and persevering.

The sinapisms and irritating frictions of pepper may be assisted by the use of "pepper tea" internally ; carbonate of ammonia also ; with camphor, and, if necessary, alcoholic stimulants, though these should be used sparingly, lest they excite too powerful a reaction—*fever*. The vomiting of this stage may be controlled by opium, as before described. If vomited, it may be repeated. In *small* quantities it will benefit the general condition of the patient, as well as check the vomiting. These attacks are, fortunately, in most cases *intermittent*, and give an opportunity for the *peculiar* treatment—*i. e.*, large doses of quinine. This should be given in larger doses here than anywhere else. Unless the patient is profoundly affected by the remedy, the quantity given should not be less than forty grains. I have usually given more.

The administration of quinine may commence before the remission, if the stomach or bowels (by injection) will tolerate it. In small and frequent doses it can do no injury, and will, if retained, be ready to operate on the system early in the remission.

If the bowels are irritable, the opium will be necessary to

prepare the way for injections, as well as to relieve the irritability of the parts, which helps to prostrate the patient.

I may here remark, in regard to the use of quinine by injections, that it must always be accompanied by opium in some form. Laudanum is the best. The injection should be small, not more than one and a half or two ounces of starch, and a drop or more of laudanum to each grain of quinine. The quinine should be thoroughly triturated with a small part of the starch *first*, and then mixed with the remainder of the starch and laudanum.

The system should be brought entirely under the influence of quinine, as early in the intermission as possible. The same treatment should be used in the second intermission. Usually this paroxysm will be light, and the fever lose its malignant form.

It may then be treated on the principles before laid down, and this treatment should be continued for some days after the cessation of fever, to guard against a relapse.

If hepatic or other inflammation complicates these cases, the treatment is rendered more difficult, and the danger is greater, but the patient's condition is by no means hopeless.

*Diet.*—During the intermissions, I have always restricted patients to light food, as broths, gruels, and farinaceous articles ; the appetite does not generally crave more. The use of quinine tends to take away appetite for the time.

To me the food during convalescence has never been an object of great care. The system is seldom greatly reduced in strength and flesh during an attack of fever, consequently the patient soon returns to his ordinary pursuits. Under these circumstances, I have not hesitated to permit him to eat moderately of such food as his appetite has craved. I have seen no injury accrue from such a course.

During convalescence, after the fever is subdued, and at various times when persons suffer from debility and prostration, which may come on even without fever, the use of tonics is necessary. Usually the preparations of Peruvian



bark (the *tincture* or *wine*) are the best. The malt liquors, wines, and brandy are sometimes necessary, although the indiscriminate and habitual use of spirits, *in health*, is no less injurious in hot than in cold climates. Persons who are susceptible to the malarious influences will often find the use of the "tincture" or "wine of bark" useful as a prophylactic. It may be taken for a long time.

In case organic disease remains, I have enjoined abstinence from all stimulating food, at least for a time.

## APPENDIX.

### SOME SUGGESTIONS TO PERSONS VISITING THE COAST OF AFRICA.

PERSONS going to Africa from America usually take passage in trading vessels, and consequently often touch at various places along the coast, before reaching their port of destination. Such are usually tempted to go ashore and remain night as well as day, while the vessel is in port, especially if they have suffered from sickness or other causes at sea. Beside, passengers are solicited to remain on shore, at many places, by Europeans living on the coast.

It is highly important, however, to resist these temptations. Many persons are attacked with fever, from a single night's exposure on shore. The malarious influence (the cause of fever) is comparatively trifling by day, but seems to be developed immediately on the setting of the sun, and the deposit of the dew, at the cooling of the atmosphere.

No one would rationally risk the inconvenience of being sick on board a vessel, or the danger arising from the unavoidable lack of care and medical skill on board, without weightier reasons than the ordinary unpleasantness of sleeping on a vessel.

#### CONDITION OF SYSTEM IN PERSONS NEWLY ARRIVED.

Many persons, on visiting hot climates, are subject to a degree of excitement or exhilaration of spirits, under the influence of which they are likely to overtax their strength, bodily and mental, and expose themselves to violent attacks of fever, which might be avoided by greater caution and moderation. The causes of this state of mind, though apparent to every one on reflection, are quite unap-

preciated by those who are the subjects of it ; that is, so far as they are personally concerned.

The climate, which is never on this coast sufficiently hot to produce immediate debility (though this may be the ultimate tendency), is at some seasons exhilarating. The sea breeze adds very much to this effect.

The excitement on reaching land, after a long sea voyage—of seeing new sights, and engaging in new scenes—the desire to arrange houses and prepare for living—to unpack goods to learn their condition—all urge to activity, but blind us to its effects.

Obligation is felt by many to do all they can to inform friends left behind of what they have done and seen, and *feeling well*, they do not understand why they cannot write “at least a few letters,” which, however, are likely to contain volumes.

In the case of many missionaries, the compassion felt for degraded natives leads them to forget themselves ; and the desire to go immediately into their appropriate work, or at least to prepare for it with all haste, carries them beyond the bounds of prudence.

These causes exist in the nature of things, and their bad effects must be obviated by the exercise of reason.

One should govern this inclination to undue activity, as he governs his appetites and passions.

This exhilaration of spirits leads one to exert himself in writing, reading, or studying, or in other engagements that offer, to an extent that seems very hazardous to an old resident, and to the person himself, on mature reflection, quite contrary to the rules he had previously laid down for himself.

The numerous letters that missionaries unthinkingly promise to importunate acquaintances, the journals to be transcribed and sent home to friends, preparations for living, often made to an extent impracticable in a hot climate,

are all attempted with an energy and perseverance, laudable in itself, but quite unadapted to the circumstances.

The state of the system after a sea voyage, especially if one has suffered from sea-sickness, is one of feebleness and irritability. It may be in a condition to return quickly to a healthy standard, if not impeded, but it is not usually at that standard. Hence the necessity of caution against over exertion, physical or mental. These excesses were, as I believe, more frequent formerly than now. People have learned wisdom from the experience of others, in regard to the danger of over exertion and excitement, and yet such is the insidious nature of this state of mind, that one can hardly realize the danger of yielding to his natural impulses in regard to labor, so contrary is it to his previous home experience.

#### EXPOSURE IN THE SUN.

Persons visiting hot climates need to exercise much care in regard to exposure to the direct rays of the sun ; but this should not be carried so far as to curtail free exercise in the open air.

There are errors on both sides in this matter. Some, discarding the use of the umbrella, and even of a thick hat, expose themselves at all hours of the day ; while others (especially ladies) remain in the house constantly, taking no active out-of-door exercise. The first are liable to violent headaches, and attacks of active fever ; the last, from inevitable debility and prostration, with fever of a malignant character.

In ordinary cases, an awning on the water, and an umbrella on land, will protect from the injurious effects of the sun's direct rays ; but newly arrived persons will find it for their comfort, as well as safety, to remain, as far as possible, in the shade at mid-day, or rather in the hottest part of the day, from 12 M. until 2 or 3 P. M.



## EXERCISE.

Exercise in the open air is absolutely necessary to health. Without it, the observance of all other hygienic rules and all medical treatment cannot secure health.

It is sufficiently necessary in cold climates ; in hot, it is indispensable. Exercise should be taken *daily*, in walking, riding, or manual labor, out of doors.

The daily labors of ladies in the family cannot be safely substituted for it. The labors usually performed in the house, in which the person sits or stands at work, will not answer the purpose of healthful exercise. The effect, like that of slow marching on soldiers (as physiologists tell us), will not raise the pulse like active exercise.

Sedentary and studious habits are very injurious to the health. Few persons can endure more than three or four hours of hard study in a day—at least during the early part of a stay on this coast. I have known many persons to receive permanent injury by mental exertion and confinement, without a suspicion on their part of the true cause of trouble.

This limit of the hours of study does not prevent a rapid acquisition of language, in those who make it their study ; that is, in a country where the language is spoken. After a little preliminary study, it must be acquired by direct intercourse with those who speak it.

Idleness, or sedentary labor, as sowing and teaching, or studying, wearies a person and indisposes to exercise ; but it does not for this reason obviate the necessity of exercise, it rather necessitates it. A person weary from study (sleepy, perhaps) will be rested much more effectually by a *walk* than by a *sleep*.

## DIET.

The diet best adapted to hot climates has been to many a subject of study, and many rules have been laid down for its regulation ; but these are necessarily only general, and each

person must, to some extent, be a judge in regard to the articles best adapted to his own peculiarities of system. This is by no means a difficult work.

I may however make a few suggestions. It is injurious to change suddenly and entirely diet of any kind, unless it be positively injurious. This may be done gradually, and in many persons who have been accustomed to a gross, hearty diet in cold climates, it must be accomplished.

The most wholesome diet, without doubt, is chiefly vegetable. In Africa, the yam, sweet potato, plantain, cassada, Indian corn, rice, and wheat flour, are wholesome. The common potato raised on some parts of the coast, or brought from Europe, would be unwholesome, if in quantity. Those imported are spoiled in transportation, the others are always worthless.

Besides vegetables we have fish, with mutton, beef, goat's-meat, and fowls, all of which are found free from fat, and consequently wholesome. They are complained of on this account, but are much better adapted to the climate.

The salt and smoked meats and those preserved in oil (though often used from necessity) are injurious in large quantity.

The green vegetables—cabbage, lettuce, radishes, and the like—used sparingly as condiments and as stimulants to the appetite (they never can be such to the digestion), are admissible. The oils, and butter (which is usually spoiled), are to be used only in the same way, but more sparingly; and may be entirely dispensed with, most profitably.

The stimulating condiments, as black and red pepper, mustard, and others of this kind, habitually used in large quantities on this coast, are of very questionable utility when used with the food. Their use is defended on the ground of the necessity for stimuli in a debilitating climate. That such a necessity may exist I admit, but in healthy persons the time of taking food is the most improper in the day, for taking these or any other stimuli. The tendency of

such articles in large quantities is to impede digestion (rather than promote it), by changing the natural digestive secretion. Physiologists tell us, that all irritants produce, into the stomach, a flow of mucous, instead of the normal digestive fluid. If stimulants are needed for an enfeebled constitution, they should be taken in small quantities *between* meals. Though this advice may conflict with the habits and preconceived notions of many, yet I am satisfied of its correctness.

In regard to fruits, I think, that most of those we find on the African coast are wholesome, if ripe, and if eaten in moderation. They are craved by all persons, native and foreign, and are in many cases necessary to produce a soluble state of the bowels, and in this way they obviate the necessity of active medicine. They cannot all be used, however, by every person. The pine-apple disagrees with some, being laxative and otherwise irritating to the system. The banana, too, disagrees with some. I am informed by credible persons, that it has in themselves brought on chills. It sometimes deranges the stomach, producing a foul tongue. These fruits should therefore be used with the recollection of these facts.

#### CLOTHING.

Clothing is a matter of some consequence, as it regards the kinds most conducive to health. Though the mean temperature is high and the range of the thermometer small, yet there is often an irritability of system that produces a great susceptibility to cold, and makes it necessary to guard against exposure to even the slight changes that occur. There is an advantage in clothing warmly enough to produce a slight perspiration, and also to protect against chilliness during perspiration. Of course, the clothing should not *overheat* or weary the wearer. Some persons find it necessary to use flannel next the skin, but usually cotton or silk under clothing is more agreeable to the feelings, and suffi-



ciently warm. The irritability of skin is such as to forbid the use of woollens. Lichen ("prickly heat") often torments persons, and prevents its use. The under clothing for both sexes being thus provided for, the outside dress of gentlemen may vary to suit the season and time of day. Morning and evening there is often need of light cloth coats, especially on the coast, where the land and sea breeze is strong. In the "cold season" woollen clothing is worn with benefit and comfort most of the time. At other seasons, and by some, in all seasons, linen is worn—*perhaps* with safety. Americans, however, will scarcely be found to do this at all seasons. Worsted and thin woollen goods of various kinds, are found to answer the demands of most persons, and are doubtless the safest kind of dress. The ladies usually wear muslin and thin gingham—with silk, or light wool fabrics in cold weather.

#### BATHING.

I believe that nothing contributes more to the health of individuals (exercise excepted), than daily bathing. It may be cold or tepid; although the rule should be, to make the temperature as low as can be borne without producing a chill. The system should always feel a slight reaction, *i. e.* warmth. The temperature can often be gradually reduced, until the person can bear a *cold* bath.

The shower, plunge, or sponge bath may be used. If the shock of the first two is too great, the last should be used.

Alkaline baths may be used with benefit in case of irritability of the skin, although common bar soap is a very good substitute. The first is made with  $\frac{1}{2}$  lb. sal soda to a barrel of water, or one lb. of bi-carbonate of soda to a barrel.

#### LICHEN [*prickly heat*].

This disease is a source of great annoyance to persons visiting hot climates. Most persons gain by experience a clearer idea of its true characteristics, than I can give by a



description. The attention is called to the eruption by the itching, which is often intense.

The appearance is that of minute pimples in a bright, red surface. These on being irritated by the clothes or by scratching (from which few can abstain), become enlarged, hardened, and bloody ; the itching continuing at the same time. These after a time disappear by drying away, but are succeeded by successive crops, which pass through the same course. This is often connected with or runs into another eruption of a pustular nature (*impetigo*), a large *fester* filled with a semi-transparent fluid, which forms large scabs, and often spreads over large surfaces, chiefly on the hands, arms, and legs. These sores are very tender, and often incapacitate a person for labor or enjoyment.

The treatment of these eruptions consists in diet, external applications, and internal remedies. In case of simple prickly heat, the diet should be nutritious, but unstimulating ; occasionally gentle purgatives should be used, either pills of rhubarb, soda, and ipecacuanha (four parts of the first two, and one of the last), or if the patient choose, Seidlitz powders. The external treatment is tepid alkaline baths (or soap), with but little friction.

The body may then be rubbed with a cut lime (native lemon), and this may be repeated when the itching returns. This treatment will generally cure. But if it fails, resort may be had to the "red precipitate ointment"—made by thoroughly mixing a drachm of red precipitate with an ounce of lard.\* In case of the *impetigo*, this ointment is, as I believe, a sovereign remedy ; in my hands it has never failed.

#### FEVER.

Though enough may seem to have been said on the subject of fever in the foregoing pages, yet I will here recapitulate a few suggestions :

All persons on visiting the west coast of Africa are in

\* See note A.

danger of being attacked with fever, either *intermittent* or *remittent* (bilious), after the first week. Though many escape for months ; yet *more*, without the use of preventives, are attacked the first month. As this is the case, and as many attacks of fever may be prevented by the timely use of remedies, it is but the dictate of reason to practise a degree of watchfulness in regard to the approach of this disease, and to use the appropriate preventives of it, if detected.

The approach of fever may often be known by various symptoms, which are described at some length in the foregoing "Observations," at p. 5th, under the head of "Preparatory Stage." These consist of various unpleasant sensations, such as general uneasiness, restlessness, weariness without labor, loss of appetite, sleeplessness, and slight headache ; one or all of these symptoms, with costiveness, and very *frequently* with a copious and pale urine. These and other variations from health, will be recognized by the wary ; and if detected, must not be neglected under the impression that the fever they foretell can be braved, or that these sensations are but transient "bad feelings."

Though in a different climate and under different circumstances, frequent variations from health may be safely and easily starved out or worked off—such attempts *here* are hazardous, though exceedingly common among newly arrived persons—they usually terminate in fever. It has, therefore, been my practice, and with the happiest results, in all such cases to make immediate use of the only remedy in which I have confidence—that is, quinine. I give it as a preventive ; and if taken faithfully, and in sufficient quantities, it will prevent the fever. The mode of administration is described at p. 25, under the head of "Treatment." On the first warning of fever, it should be taken in four or five-grain doses every hour, until the peculiar effects of the medicine are produced ; they are ringing in the ears and partial deafness, often slight headache. If this effect can be produced before the chill comes on, the attack will be prevented or lessened in severity.

Long exposure in the sun often produces fever, even without the premonitions that I have described. In cases of such exposure, quinine should be taken with the view of preventing an attack.

Persons exposed to rain, and having sat a long time in wet clothes, are in danger, and should protect themselves in the same way. These last remarks apply to all persons, whether they have lived a long or short time on the coast.

Quinine must be used in the same way as often as the symptoms first demanding it return. The medicine cannot protect *permanently*. There is a disposition in all "marsh" fevers to return. The same fact is observable after an attack has been prevented. I think, however, that the liability to return, is not so great after the fever has been repeatedly prevented, as after its frequent development.

It has, however, been thought by many, that it is not best to *check* or prevent a paroxysm (*a "fit of ague"*), lest some undefined but terrible difficulty be substituted for the fever, and prove worse than the paroxysm itself. This is a most pernicious error, since it is proved by observation, that even mild paroxysms not only debilitate their subjects for the time, but produce congestions in internal organs, which are liable to increase, and even produce permanent enlargements. Beside, the first attack of fever has sometimes proved fatal; and certainly no hypothetical difficulty can be more terrible than *this termination*. But this danger in preventing an attack is purely imaginary. I have verified the assertion in numerous instances.

Again, it is believed that the first attack of fever fortifies the system against subsequent attacks. I must say, I have never seen such an effect produced. I have always found that the person who has been attacked with fever soonest after arriving is subsequently attacked oftenest and most severely; and that those who escape fever for a month or more after landing, will generally evade their first attack longer than others do their second. I believe, as I have mentioned in the forego-



ing "Observations," p. 25, that one attack brings on or prepares the system for another ; and that this fever tends to perpetuate itself. This it does as long as a man lives in a malarious country, and the only way to gain relief is to use preventives. This must often be done periodically, as directed at p. 25.

When, however, persons are unable to check the fever in the beginning ; or when they do not notice its approach, they will have a chill or "a dumb ague," as it is called, succeeded by a hot stage ("fever"), and perspiration more or less profuse.

With reference to the treatment of the disease in these stages, I can make but a few passing remarks. The subject is treated of at p. 25, and following.

In no case is there any danger in *breaking up* a chill or stopping the pains felt by the patient, by any means that are not disagreeable or distressing to the patient. He may take hot drinks and cover up in bed. His limbs and back may be rubbed with dry flannel or with some irritant, as pounded peppers, or pepper sauce ; or have mustard drafts applied to his feet and legs and arms and back—or bottles of hot water may be applied to the same parts. These means *must* be used if the chill continues a long time—*i. e.*, an hour or more—or if it should return after it has once subsided. When the *fever* comes on, it is not necessary to be treated with great activity, as with emetics, cathartics, and *calomel*. In a great share of cases, if *permitted*, it will subside or remit spontaneously in perspiration, and afford an opportunity for the true medication—the use of quinine. There, may, however, be something done to relieve the *distress* of the hot stage, which will probably shorten it.

The patient craves drink, cold or hot ; he may take all that his stomach will bear. He may be sponged off with water, warm or cold as he chooses. He may take a cold bath if he is hot and *dry*. If his head aches (as it probably will), it must be wet with cold water, and a linen cloth



wrung out in cold water will need to be applied to his head and often changed. Let him breathe the fresh air, and if his bowels are confined (which often produces headache), he may take a cathartic ; but not on account of the fever simply. On the first appearance of perspiration or when the pulse becomes less frequent, the time will have come for the administration of quinine. If this is done energetically, the disease in many cases will be at an end. The medicine must be given in six grain doses, until its peculiar effects are produced ; its effects should then be kept up by two grain doses, once in an hour or two hours, until the time of day at which the attack commenced on the previous day shall have passed. This administration of small doses is designed to *keep up* the effects of the quinine.

The same medicine should be used on the *third* day, for six or nine hours before the same hour of the day, on which the paroxysm may be expected, as the fever often returns on the *third* day, either because it is not fully subdued, or because it is an every-other-day fever, called "*tertian*."

Occasionally the fever is obstinate and will not yield. It returns notwithstanding the quinine ; but in this case the same course must be repeated, and the third paroxysm must be prevented if possible. It probably can be.

The nausea that is common in fever, which often prevents the administration of medicine, (especially of quinine) demands a passing notice.

The general treatment is given at page 31.

The remedies there directed, should be used with perseverance. If the internal remedies are vomited, they must be repeated frequently.

If the time for giving quinine has come, it may be administered in combination with, (or immediately after) opium. If rejected it must be repeated.

In all such cases the enema of quinine in starch and laudanum, (mentioned at page 34,) should be effectually tried. The quantity of laudanum should be large.

If ordinary means fail the parts over the stomach may be denuded of cuticle, and morphine applied.

This may be done by means of aqua ammonia, (hartshorn). A piece of flannel three inches square, may be saturated with the hartshorn and quickly placed over the stomach, and covered with oiled silk, or adhesive plaster. In a quarter or half of an hour a blister will be formed, from which the cuticle may be taken and two or three grains of Morphine, (mixed with four parts of flour) sprinkled over the part.

As the nausea subsides with the fever, all means directed against that, will tend to relieve the nausea.

I shall not here give a history of the severer kinds of fever. They are described in the foregoing observations at p. 11, and following.

There are several severe varieties; but in most cases they are preceded by one or more mild paroxysms, which not being thoroughly treated at first, run into some violent disease. In most of these cases that I have seen, there has been a mild chill or fever at the commencement.

The most violent may be checked, as I believe, by timely energetic treatment. The preventive treatment, p. 44, will prove triumphant in *most* cases.

“The price” of health in Africa “is eternal vigilance.”

#### NOTE A.

An ointment made with cold cream (ungt. squa rosæ,) 3 j  
Glycerin, ..... 3 j  
Chloroform, ..... 3 ij  
Oil of bitter almonds, (olii amyg. amaræ.) .....gtt. x.  
makes a very soothing application to the irritable surfaces in simple lichen, and in many cases will entirely assuage the itching. It should be kept from the air.

This ointment is not officinal.

It was first directed by Dr. Harris, of the Marine hospital, Staten Island.











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11

H. J.

1-ii 32.

